WE CLAIM:

1. A method for obtaining stem cells from an umbilical cord matrix comprising:

(a) fractionating the umbilical cord matrix source of cells, the source substantially free of cord blood, into a fraction enriched with stem cells, and a fraction depleted of stem cells, and

(b) exposing the fraction enriched with stem cells to conditions suitable for cell proliferation.

2. The method of claim 1 wherein the source of cell comprises umbilical cord Wharton's Jelly.

3. A cultured isolate comprising stem cells isolated from an umbilical cord matrix source of stem cells, other than cord blood, the isolate comprising primitive immortal stem cells.

4. A method of differentiating stem cells to a transplantable cell, the method comprising:

(a) obtaining a stem cell from an umbilical cord matrix source of cells, the source other than cord blood; and

(b) exposing the stem cell to a differentiating factor to produce a transplantable cell.

5. The method of claim 4 wherein the transplantable cell is an ectodermal cell.

6. The method of claim 4 wherein the transplantable cell is a endodermal cell.

7. The method of claim 4 wherein the transplantable cell is a neuroectodermal cell.

8. A method of treating an animal for alleviation of a disease symptom, the method comprising obtaining a transformed cell comprising stem cells isolated from a source of such cells derived from umbilical cord other than cord blood and transplanting that cell into an animal requiring treatment provided by the transformed cell.

9. A method of introducing a foreign gene into a stem cell, the method comprising obtaining a stem cell of claim 1 and contacting that stem cell with a transforming factor comprising a foreign gene.

10. The method of claim 9 wherein the transforming factor comprises a viral vector having a foreign gene sequence.

11. The method of claim 9, wherein the transforming factor comprises non-viral vector, siRNA, or a mixture thereof.

12. A method of generating a bank of stem cells from an umbilical cord matrix, the method comprising:

(a) fractionating the umbilical cord matrix into a fraction enriched with stem cells and a fraction depleted of cells; and

(b) culturing the fraction enriched with stem cells in a culture medium containing one or more growth factors, wherein the stem cells undergo mitotic expansion.

13. The method of claim 12 further comprising tissue typing, banking and expanding the umbilical cord matrix stem cells needed.

14. The method of claim 12 further comprising differentiating the umbilical cord matrix stem cells in vitro.

15. The method of claim 12 further comprising genetically manipulating the umbilical cord matrix stem cells in vitro.

16. The method of claim 12 further comprising passaging the umbilical cord stem cells for at least 10 times and the umbilical cord stem cells remaining stable.

17. The method of claim 12 wherein the animal cells are from any amniotic species.

18. The method of claim 12 wherein the animal cells are human cells.

19. The method of claim 12 wherein the animal cells are porcine or bovine cells.

20. The method of claim 12 wherein the animal cells are equine or canine cells.

21. The method of claim 12 wherein the animal cells are rodent cells.

22. The method of claim 12 wherein the animal cells are bird cells.

23. A method of transplanting the transplantable cell of claim 4, the method comprising:

culturing the umbilical cord matrix stem cells in a culture medium containing one or more growth factors wherein the stem cells undergo mitotic expansion.

24. The method of claim 23 further comprising:

culturing the umbilical cord matrix stem cells in a culture medium containing one or more growth factors for inducing the production of stem and neural cells.

25. The method of claim 23 further comprising:

culturing the umbilical cord matrix stem cells in a culture medium containing one or more growth factors for inducing the neural cells to undergo mitotic expansion.

26. The method of claim 24 further comprising:

culturing the neural cells in a culture medium containing one or more growth factors for inducing dopamine production in the neural cells.

27. The method of claim 24 wherein the neural transplantable cell is introduced into the substantia nigra region of the midbrain striatum in a patient with Parkinson's disease.

28. The method of claim 24 wherein the neural transplantable cells are capable of producing dopamine.

29. The method of claim 23 further comprising culturing the umbilical cord matrix stem cells in a culture medium containing one or more growth factors for inducing the production of myofibroblast cells wherein the myofibroblast cells undergo mitotic expansion.

30. The method of claim 29 further comprising introducing the myofibroblast cells into a patient.

31. The method of claim 29 wherein the myofibroblast cells have a homing ability for injured tissues and assist in tissue repair.

32. A method of transplanting the cell of claim 1, the method comprising: transplanting that cell into an animal that can benefit from a stem cell transplant.

33. A method of treating an animal for alleviation of a disease symptom, the method comprising obtaining a UCMS cell isolated from a source of such cells derived from umbilical cord other than cord blood and transplanting that UCMS cell into an animal that can benefit from a stem cell transplant.

34. A purified preparation of human UCMS cells comprising:

(a) UCMS cells derived from Wharton's Jelly; capable of proliferation in an in vitro culture for over one year;

(b) maintaining a karyotype in which all the chromosomes characteristic of the human are present and not noticeably altered through prolonged culture; and

(c) maintaining the potential to differentiate into derivatives of endoderm, mesoderm or ectoderm tissues throughout the culture.

35. The stem cells of claim 34 wherein the stem cells are capable of being typed, banked or expanded.

36. The stem cells of claim 34 further comprising:

culturing the UCMS cells in a culture medium containing one or more growth factors for inducing neuron differentiation and maturation.

37. The stem cells of claim 36 wherein the differentiated and mature neuron is introduced into the central nervous system of a patient.

38. The stem cells of claim 36 further comprising:

culturing the neural cells in a culture medium containing one or more growth factors for inducing glial cell differentiation and maturation.

39. The stem cells of claim 38 wherein the differentiated and mature glial cell is introduced into the central nervous system of a patient.

40. The stem cells of claim 38 wherein the differentiated and mature glial cell is introduced into the spinal cord of a patient.

41. A stem cell culture comprising a stem cell population and a feeder cell population, the culture comprising:

(a) amniote stem cells capable of proliferation in an in vitro culture for over one year;

(b) a feeder cell population comprising amniote UCMS cells, said feeder cells incapable of beginning or conducting a mitotic process, but capable of providing growth factors;

(c) maintaining a karyotype in which all the chromosomes mammalian characteristics are present and not noticeably altered through prolonged culture; and

(d) maintaining the potential to differentiate into derivatives of endoderm, mesoderm and ectoderm tissues throughout the culture.

42. The stem cell culture of claim 41 wherein the stem cells are capable of being typed, banked or expanded.

43. The stem cell culture of claim 42 wherein the stem cells and the feeder cells are of human origin.

44. A method of generating transgenic or chimeric animals comprising injecting UCMS cells into morulae and/or blastocysts.

45. The method of claim 44, further comprising employing the transgenic or chimeric animals to reproduce the genetic strain that provides the UCMS cells.

46. The method of claim 44, wherein the UCMS cells are transgenic and the animal is a transgenic animal.